

Integrated Plan-Procedures-Telemetry Ops Concept and Prototype

Completed Technology Project (2011 - 2012)



Project Introduction

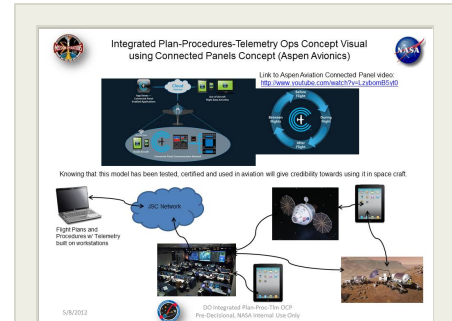
The project scope includes developing the ops concept and prototype for a near-seamless interface between mission plans, electronic procedures and live telemetry data used in executing and monitoring In-Space and Planetary Surface Activities. The time is right for determining a solution because of recent technology developments and mature operational expertise that exists to design a near-seamless software architect plan that also maximizes operational mobility. Concepts will include auto access of applicable telemetry parameters within the procedure and plan notification of the procedure completion to help with future planning. The research for this project will leverage off recent pursuits of these integrated interfaces from different approaches. Operations and crew experts will propose the best approach to build on for future software development work.

Develop an ops concept of the integrated Planning System, Electronic Procedures and Live Telemetry data interfaces to be used for In-Space and Planetary Surface Activities; leveraging off existing Next Generation Planning System, Electronic Procedures Viewer and Automation For Operations plan-procedure software, while adding in the capability to process live telemetry. The purpose for this is to establish a better situational awareness of activity and procedures execution on a single interface which is not available today. This is innovative because it includes the ability to view integrated or single system views on portable devices, benefiting overall Exploration ops planning.

Anticipated Benefits

This project is important to NASA for several reasons. The first reason is specific to Space Health and Medicine category for situational awareness. There currently is an issue with the plans, procedures and telemetry being on either separate programs or separate systems. Operations for the crew whether onboard a vehicle or on a planetary surface should be streamlined as much as possible and give the crew greater situational awareness. The crew should not have to go back and forth looking for the necessary data to do their jobs; all operations products should be integrated.

The second reason is specific to Economical Space Access. By having the plans, data and telemetry co-located either on a display or on a mobile device, it will cut the need for paper procedures (with the exception of Emergency procedures). For Space Shuttle, paper-based procedures were costing ~\$1,000,000 per flight; there were additional costs of manifesting blank paper for updates to books when procedures changed (crew time costs could be added to this value). The current ISS method is to push electronic procedures to crew laptops. This proposal would take it one-step further by adding telemetry to those procedures and pushing data to mobile devices.



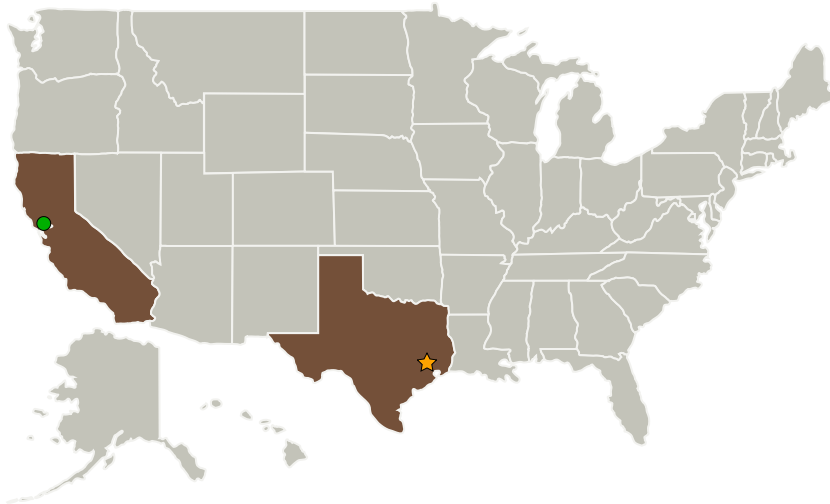
Project Image Integrated Plan-Procedures-Telemetry Ops Concept and Prototype

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Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations

California	Texas
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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Center Innovation Fund: JSC CIF

Project Management

Program Director:

Michael R Lapointe

Program Manager:

Carlos H Westhelle

Project Manager:

Jennifer B Price

Principal Investigator:

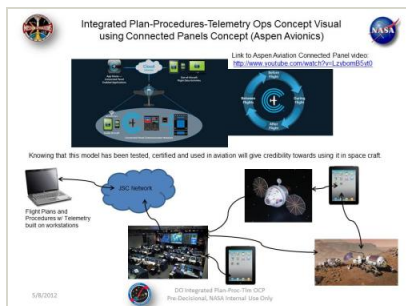
Jennifer B Price

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Images

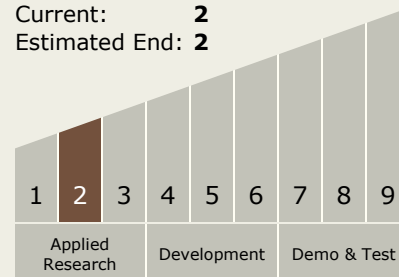
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(https://techport.nasa.gov/image/2233)

Technology Maturity (TRL)

Start: 2
 Current: 2
 Estimated End: 2



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - TX06.6 Human Systems Integration
 - TX06.6.1 Human Factors Engineering